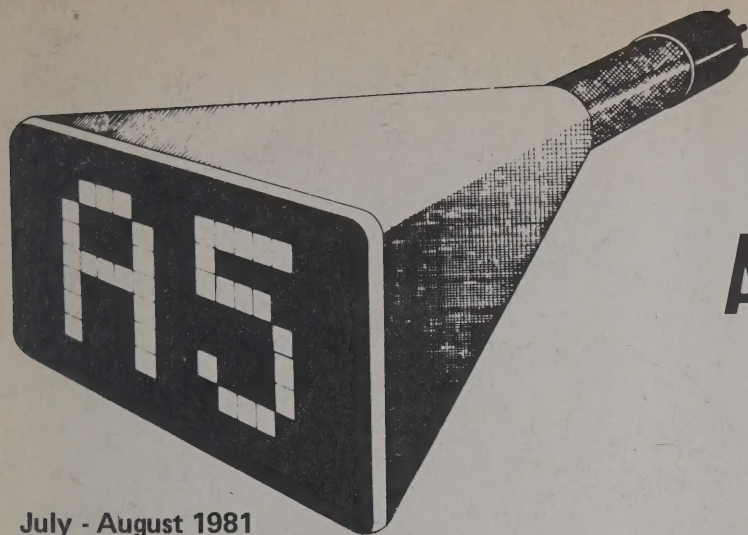




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AMATEUR TELEVISION MAGAZINE

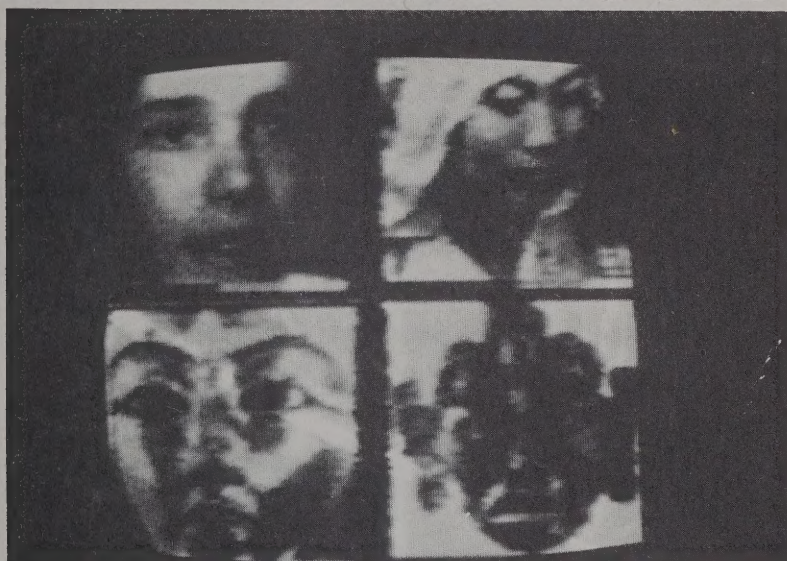
July - August 1981

Vol. 11, No. 4

ATV BALLOONING —

SIMPLE MOD FOR 4 MEMORY 400!

VHF PROPAGATION PRIMER First Of A Series



RE: 4 FRAME '400 MOD - KD6HF Photo shows 455TV Pix being stored in one Robot '400 Memory. Each quadrant may be used to store or transmit one complete SSTV Pix. Resolution is 64 x 64.



Part of ATV group at "base" vehicle

WBQFB Tests ATV sound-subcarrier with WBQZPX at Balloon Rally

**NOW!!! YOUR OWN NAME OR CALL ON A REAL STREET SIGN!!!
THE EXACT SAME WEATHERPROOF REFLECTORIZED
SIGN USED AT INTERSECTIONS EVERYWHERE!!**

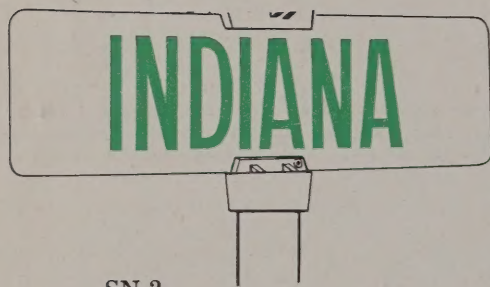
Not a cheap plastic imitation, the real thing!! To our knowledge the first time ever offered to the public. Usually these green/white signs are only sold to street departments and highway maintenance departments. By special arrangement, ATV Magazine can now offer you these same signs.

You can now identify your drive, private road, marina slip, airport hanger or parking spot. Great with your name, ham call, coast guard ID, aircraft N number, etc. Anything you like. Nick names, pets names. Great for the successful business person who has everything. A great gift too!

What you get is a genuine full sized street sign ready to mount on a standard 2" pipe. The sign is heavy special alloy aluminum reflectorized, with your message silk screened on **both** sides. Exactly the same as regular street signs. Each is 6" high, with a width of 20 to 40 inches depending on name length. Each sign is twice printed with weather resistant paint for long life, and is overall beaded for additional long life and weather resistance. Each sign comes with a cast heavy duty mount. All you need is a length of 2" pipe readily available anywhere, the length of which to suit your purpose. For a driveway, a 10' pipe is standard, for aircraft, mount it just above the grass next to your hanger or parking place. For a marina slip, a six foot or higher pipe on the dock will be just fine.

For the hamshack, kids play-house, mount on an elbo and flange.

To order, simply select the color type you want. Then, in clear block letters, print the message **EXACTLY** as you want it. Send this with \$25 to: Owen Valley Broadcasters Inc., 7391 W. Hwy. 46, Ellettsville, IN 47429. Your sign will be custom made, carefully checked and sent to you in a couple of weeks. The pictures below will help you choose the design you prefer best.



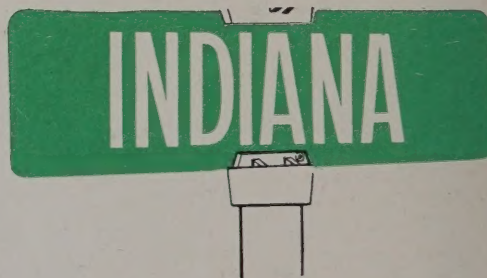
SN-2

**SN-2 OVERALL BEADED ON ALUMINUM
ASSEMBLIES**

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- 4-Way Assembly—Two aluminum blades double-faced for two street intersection.

Colors available

- Green Message on white background.
- Black Message on white background.
- White Message on green background.



SAVE \$11.00

These signs are regularly \$36. Order before Nov. 1, 1981 at our special introductory price of only \$25 a savings of 1/3!! The 2-way sign is illustrated. Signs may be stacked for 4-way identification. The price per sign is the same so a 4-way is \$50, normally \$72. These signs are clearly visible day and night and serve as great home locators in areas where visitors may have difficulty locating your home.

ORDER FORM: Please send _____ signs with the following message: _____

Enclosed is \$25 per sign. Please send to: (name) _____
(street) _____
(city, state, zip) _____



DEVOTED TO HAM TV

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Amateur Television Magazine

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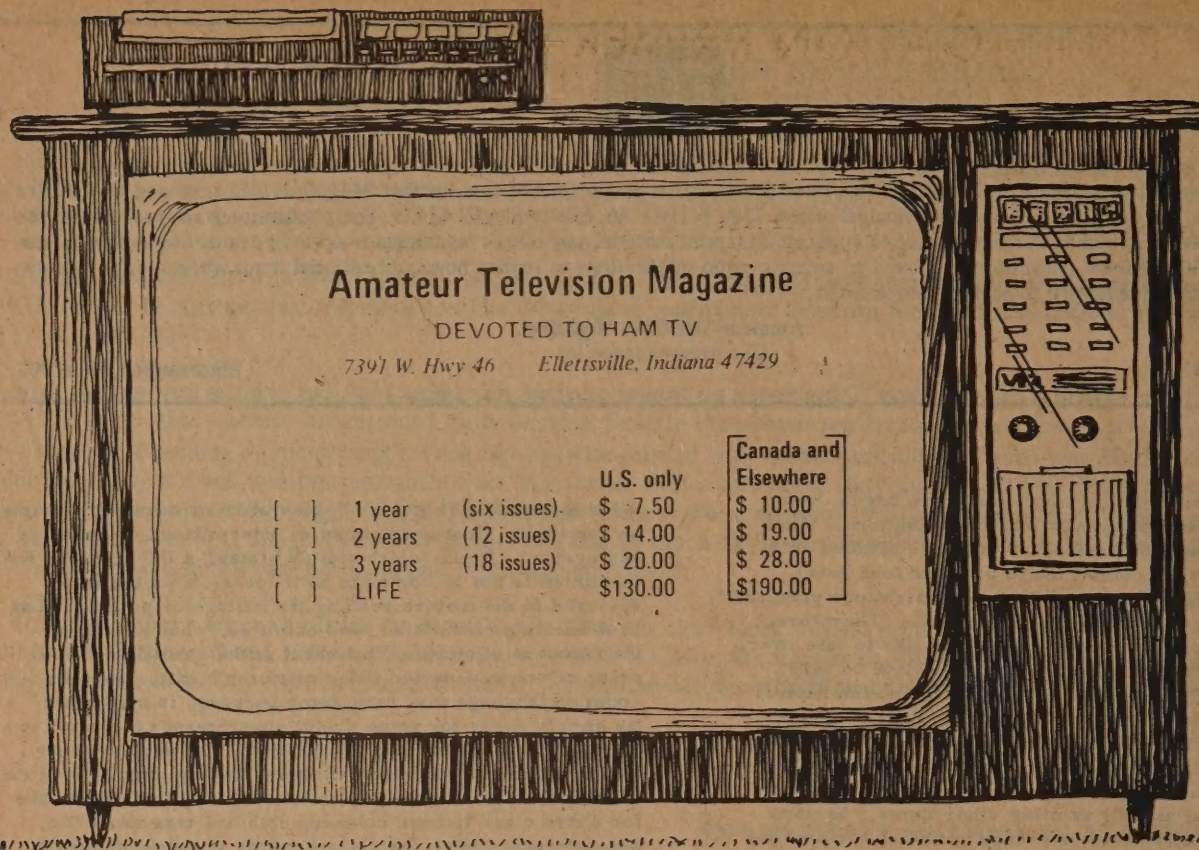
To quell any rumors which may have begun, yes, I am looking for someone to buy ATV Magazine. After seven years as your scribe, as well as countless related efforts, it has come time to pass the fond gavel. My current family and work load considerations preclude my continuing much beyond April of 1982. Therefore, I would like to find someone who would like to take over. To insure a smooth transfer, I will continue to help whomever steps forward. There will be no interruption in subscription service or the many projects we have going. We will continue to produce the very best issues we can with the material sent in by our many great contributors. This issue has two very fine articles for Robot 400 fans as well as many other items. Serious inquiries by individuals or groups who wish to purchase the business should send me a personal letter of intent with their offer or terms. I will answer all inquiries promptly. No further public statements will be made unless a bona fide purchaser is found and a deposit is exchanged. Until then, business as usual, so don't panic. Contingency plans have already been made to insure the continued publication of ATV Magazine. Now back to our regularly scheduled program.

There is unrest in the suburbs. The plain language rules proposed by the FCC for ham regulations have some folks in a tizzy. The basic problem is in the wording of the "purpose" of amateur radio which reads more like CB. The real problem is in the government political back scratching. As you may recall hearing on the TV news, the government is supposed to re-write its regulations in "common language" and eliminate the legalese. In so doing however, you lose the accuracy found in legal language. This can cause some ambiguous rules. Just as all areas are not spelled out for every conceivable circumstance, letting each case be determined by its own circumstances, when using strict legal language, the use of non legalese can lead to even greater gaps. It will be necessary for some explanation to be attached to some rules so that the intent as well as the content are known. "No parking on tuesday," is easy enough to understand. "No parking on the second day of the week," could be a cause for error depending on how you count your week. Do you start with Sunday, Monday, Saturday sunset? Sunrise? You get the idea. Its much like measuring bandwidth of emitted signals. Bandwidth at what level? 3 DB down from peak, 6 DB, 36db, 50 db? Rounded to what accuracy, hundreds of cycles, tens, cycles? With what accuracy of equipment? How terminated? At what operating level, 10% output, 100%?

What modulating frequency? Sine wave or square? Complex or two tone? Continuous output or intermittent. How about keying rate? A rule which simply states, "a DC input of 1 KW maximum" is not as complete as it looks. What ballistics are used in the meters reading the voltage or power? Must peak limiting circuits be used and if so, what amount of overshoot is allowed. What about peaks caused by phase delay or uncompensated filter networks? Etc. So while common language may have some purpose, in my opinion its simply a way for some crafty government contractor to fill their coffers with our tax dollars. Tax dollars which would be more wisely spent clearing the log jamb of applications renewals, allow for the return to issuance of selected calls for Extra class license holders, club and repeater calls, special event calls, field exam points at major hamfests, investigations of interference and other benefits. I think the FCC is wasting our bucks on political back scratching. John Doe average CBER may need "plain language" rules, but as learned, sophisticated people, dealing with a highly technical area of communications, we can deal with the legalese just fine. FCC, quit making work for yourself and try getting out some of the work already at hand and stop cutting back on services. For comparison, I got a client a tower clearance for 500 feet only 2.3 miles from an airport during the Christmas holiday period from the FAA in only 22 days. The FCC can't even get out a license renewal in less than three months!!!! Get with it or get out folks!! Case # 2. Local school systems do not own their busses. The busses are privately owned and contract to the school systems. The FCC wouldn't issue a license for two way radio to the drivers/owners of the busses, but would issue a license to the school which does not own the busses, radios or drivers! Now how's that for stupidity in the land mobile branch!!!! The drivers got their licenses by calling themselves something else, like realtors, loose load haulers (sand gravel) etc. Yes folks, Palendrome is at home at the FCC. On the one hand the FCC says it can't enforce its own rules, doesn't have a big enough budget, and on the other, encourages even bigger loads of paperwork, such as the low power TV gambit. They certainly know how to make their own problems bigger!!!!

DON'T FORGET THE SLOW SCAN CONTEST

ROBOT will also provide updates for your 800, if you didn't get a letter, ask them about it.



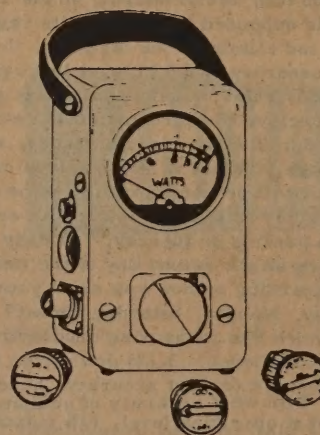
Amateur Television Magazine

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PROPAGATION PRIMER part 1

How far is the Horizon?

A simple question? Well for radio signals the theoretical radio horizon is easy to find. The formula used for most work is simple the square root of $2H$ equals the distance to the horizon in miles. For example. If your antenna is 100 feet above average terrain, and there are no obstacles between you and the horizon, your radio horizon is 14.14 miles away (square root of 200). If your antenna is 50 feet high, the horizon is 10 miles away. Now the receive antenna should also be considered. For a mobile, use 10 feet and for a fixed station, use 30 feet. This adds 7.74 miles for fixed stations and 4.47 miles for mobile. So the horizon for a fixed station with a 100 foot high antenna to a fixed station with a 30 foot high antenna is $14.14 + 7.74$ or 21.88 miles for radio line of sight maximum separation. Beyond that distance you must rely on external variances, shadow fill, and other signal scatterings to maintain communication. The chart below shows what happens to your coverage area, which goes up rather impressively with the increase in H .

H (ft)	Radius to horizon (mi)	coverage area	+ mobile Range	+ mobile area	+ fixed range	+ fixed area
10 feet	4.47 miles	28.07	8.94	56.14	12.21	76.67
30	7.74	48.60	12.21	76.67	15.48	97.21
50	10.00	62.8	14.47	90.87	17.74	111.40
100	14.14	88.79	18.61	116.87	21.88	137.40
200	20.00	125.6	24.47	153.67	27.74	174.2
300	24.50	153.9	28.97	181.93	32.24	202.46
500	31.62	198.5	36.09	226.64	39.36	247.18
1,000	44.72	280.8	49.19	290.01	52.46	329.44
2,000	63.24		67.71		70.98	
5,000	100.00	628.0	104.47		107.74	
10,000	141.42	888.12				
14,500	170.29	1069.42				
14,990	173.14	1087.31				
30,000	244.94	1538.24	249.41	1566.29	252.68	1586.83
40,000	282.84					
50,000	316.22	1985.86				
100,000	447.21					
50 mi.	726.63	4563.23				
100 mi.	1027.61					
22000mi	30,484.09 mi.	19,144,008.00				

Next issue: height vs power. How doubling your height is like getting a 5X power boost.

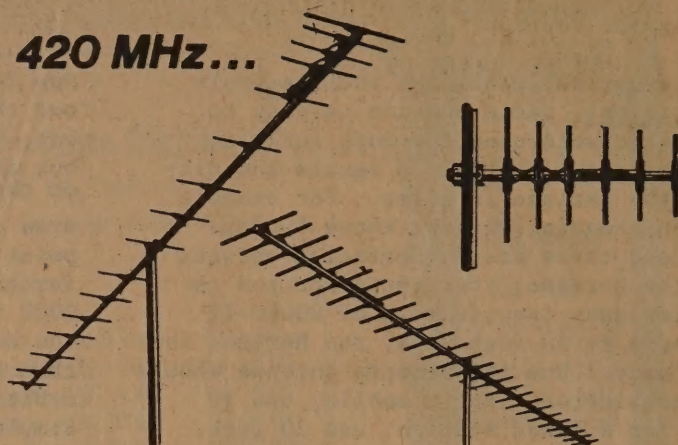
CLAYT K6AEP, 1758 Comstock Ln, San Jose, CA 95124, has several software packages for TRS-80 I, II, III, Color, for SSTV graphics and it is really great stuff. He has a four page catalog describing his programs. We will be running some of his build it projects in future issues of A5!!!

KLM Superior-Quality VHF and UHF Antennas

2 Meters...

Two-meter beams deliver maximum gain and clean patterns, with VSWR of less than 1.2:1 across the entire 144-148 MHz range. High grade insulating materials, weather-resistant aluminum boom and elements. 12, 14 and 16-element beams make outstanding moon-bounce building blocks.

420 MHz...



A versatile series of KLM beam antennas in a variety of configurations: broadband rear-mount type for horizontal or vertical arrangement, ultra-high-gain DX type, and optimized long boom Yagi for narrow-band use. All have VSWR less than 1.2:1 across the entire band. Maximum mast size: 1½"

16-Element
KLM-144-148-16 **\$99⁹⁵**

Gain: 14.8 dBd. Beam width at 3 dB pt.: 16 degrees. Feed impedance: 50 ohm balanced (KLM 1:1 Balun, 144-148-50 optional). Boom dia.: 1½". Boom length: 20.66'. Max. mast size: 1½". Center mounting. Wt.: 10 lbs.

6-Element
KLM-420-470-6

\$26⁹⁵

Frequency: 420-470 MHz. Gain: 8 dBd min. F/B ratio: 20 dB min. Beam width at 3 dB pt.: 30°. Feed impedance: 50 ohm balanced (Balun 420-470-50 optional). Boom dia.: 1". Boom length: 2'. Mounting: End or center; horizontal or vertical. Weight: 1.2 lbs.

14-Element
KLM-420-470-14

\$46⁹⁵

End mountable; vertical or horizontal polarization. Excellent for repeater control. Frequency: 420-470 MHz. Gain: 13.7 dBd. Beam width at 3 dB pt.: 24°. F/B ratio: 20 dB min. Feed impedance: 50 ohm balanced. Boom dia.: 1". Boom length: 4.75'. Wt.: 4 lbs.

KLM Antenna Accessories

BALUNS

\$49⁹⁵
EA

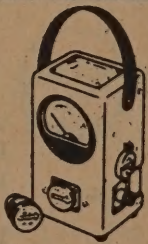
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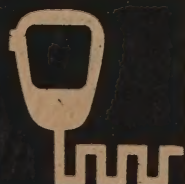




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Iowa ATV News

Eastern Iowa ATV Society reports a new record for simplex QRP operation as WBØQCD Mike Stone in Lowden, Iowa worked WDØEKP Chris in Cedar Rapids, Iowa - a distance of 41 air miles. After nearly 11 months of building, testing, erecting and aligning several UHF ATV antenna systems, WBØQCD found success using 2 "J" beams (96 elements) with approximately 18 OBD gain figure using co-phasing. Average power out the PC electronic system is about 8 watts.

WBØZPX and WBØKFB continue to exchange video daily in Cedar Rapids and recently made a test of the 443.75 MHz audio sub-carrier sending SSTV back and forth while viewing the fast scan signal. WBØKFB has a completely portable ATV system (including antenna on helmet) used successfully on ATV tests and remotes.

WDØEKP is using "GASFET" preamps along with regular preamps and has increased picture receive strength greatly.

W9RI in Rock Island, John Greve, had at one time 3 color cameras, his most recent being the Panasonic PK-800 system. John has his PC system built and is beginning transmissions.

WBØARW Bill and KA9AQR Steve in Muscatine, Iowa exchanging video. WBØARW is using a science workshop system. ATV is alive and growing in Iowa!

VIDEOCASSETTE EXCHANGE STARTED VIA A5 MAGAZINE

Now ATVers in Indiana, Chicago, New York, Iowa, Virginia, Pennsylvania and California can "see" each other. VHS 2 hour format videocassettes are being exchanged via WBØQCD Mike Stone, PO Box H, Lowden, Iowa 52255. Send your area programs and requests for other area ATV programs. Always include 2-way postal costs - tapes are loaned "free of charge" on a library basis. (SSTV tapes also needed.)

Those SSTVers who own the fantastic Volker-Wrasse SC422 systems can obtain up to date conversions of "block free" graphic lettering on video memory overlay and other improvements by contacting WB2OWX at the New York repair facility in Middletown, New York.

Dear Sirs: Just a line to let you know that we in Western NY number 14 TV stations plus 4 in the Ontario Province Canada. We are known as the Western NY Amateur TV Association. Daily 11 AM contacts are made plus the evening contacts for those who work days.

The following are very active in ATV: W2USW, W2WHK, KA2CKP, WA2OJW, WA2CXW, K2RDD, K2CEC, W2RPO, W2ELF, W2PBU, W2YJ, K2KYH, VE3AHS.

Most use GLB exciters, built from kit forms. All operate at 439.29 simplex. 73 - R. J. Dukat, K2RDD, Manchester NY

CONGRESSIONAL CUP RACE

This year's video coverage of the event went off without any problems, except for the occasional radar. We appreciate all those who used 426.25 and 147.51 for the 3 days of racing. AEA sent us their two engineering prototype isopole antennas to try out on the boats and reports from the stations watching gave the isopole a better rating than the Ringo Ranger. I don't know what the cost will be, but they plan to introduce it at the Dayton Hamvention in late April. Two boats were used to transmit the video back to the Long Beach Yacht Club where the race standings were displayed. This year an amplified splitter was used to feed 3 other sets (TV), placed around the club. The 4th feed went to a VCR so that when there was time between race sets, or for replay of a particularly close, or exciting race between two of the Catalina 38 sailboats, the VCR could be switched in. Each boat had one or two announcers on the sound sub-carrier to describe the action...almost like ABC Wide World of Sports. Generally, one video boat would be at the windward turning mark and the other at the leeward turning mark set 5 miles away. The critical moves of the race occur at these turns. We quod each other on 146.43, about 30 seconds before a pair of boats would make the turn. This gave just enough time to get ready and do an audio lead in by the announcers. It takes at least two to run the operation on each boat. One to do the camera work, the other to coordinate on 146.43 and flip the switches.

With the boats rocking and rolling, it's hard to keep the camera looking steady. After about ½ hour of running the camera, you need a break before your arms fall off...so, we could switch functions. If you were monitoring on 434 or 1265, you probably heard the two video boats, the "Paisano" and the "Tool Pusher." On the Paisano, we had Frank WA6JEY, Ed KB6OW, and for Thursday, Ed, N6BCK, came down to help Frank with the camera work. On the tool Pusher, we had Tom, W6ORG, and Ernie, WB6BAP. Saturday, Maryann, WB6YSS, came down but the rocking and rolling got to her. Stan, WA6JBI, operated the base station set up at the LBYC. This year we set up dual 48 element J beams on a rotor and an antenna mounted TVC-2L down convertor, and it really paid off in high quality color direct and off the VCR. Rarely was there any noise in the pix, even in the late afternoon when the wind and rocking and rolling were really swinging us around.

The Congressional Cup Yacht Race is second only to the America's Cup in match racing. The 10 best crews from around the world have been coming since it was

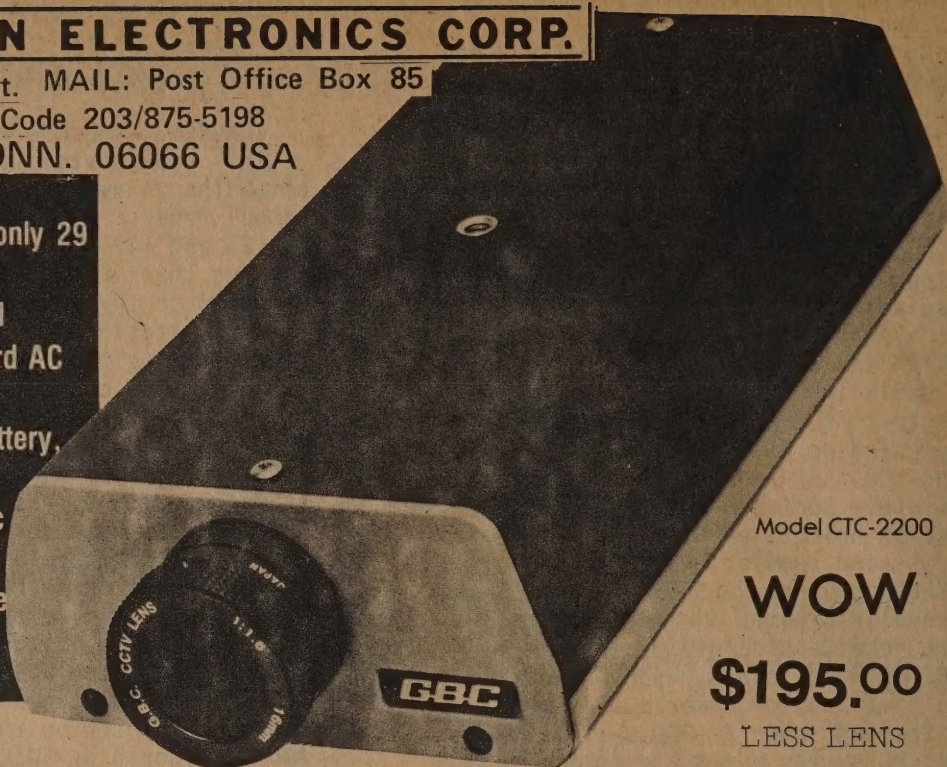
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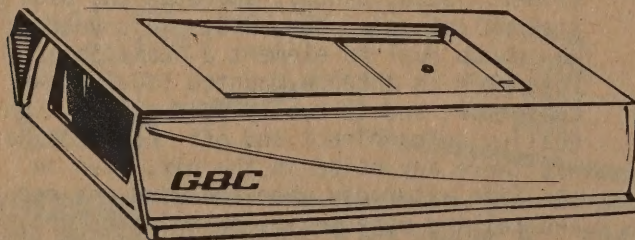
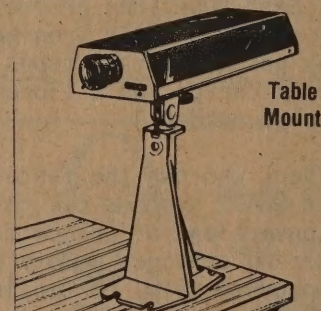
#10,100 - GBC Model CTC-2200 Mini-Max VI 2 to 1 interlace camera. Lightweight, compact operates from standard AC outlet or DC (battery, car, van, boat). 10,000 to 1 ALC. Dustproof, moisture resistant case. 550 lines resolution; Video Bandwidth 7 MHZ; Video Output 1.0V pp composite. 8 5/8"L 4 4/8"W 2"H; wt. under 2 lbs. \$195.00 (less lens).

Camera may be mounted from either top or bottom with 1/4/20 thread screw. Standard C mount for lens.

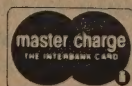
#10,102 - 16mm F1.6 lens, adjustable focus - no iris. When purchased with above camera only \$24.95

#10,103 - Model LWA-2007 Wide angle lens converter screws into front of above lens converting it to a 8mm F1.6 wide angle lens. Sold only with above lens because that is the only lens it will fit. Only \$37.95

#10,101 - WM-36 Wall Mount "three in one" (wall, table or ceiling mount.) Sturdy weatherproof durable camera mount for indoor/outdoor use. Adj. panning head gives camera 360° horiz. & 90° vert. mobility. Can be secured to mounting surface in minutes. Camera easily attaches to locking disk on pan head. 8" long including pan head 1 1/4" wide at pan head base 3 1/2" wide at mounting base. Wt. 10 1/2 oz. Holds up to 5 lbs. \$19.75



#10,104 - LOH-2005 Indoor-Outdoor Camera Housing. Constructed of rugged weather resistant ABS cyclac material. Housing base is made of lightweight corrosion resistant material. Lens window is scratch resistant glass. Hardware is cadmium plated to resist rust. Tested to withstand temperatures from -30°F to +150°F. Designed to allow for top or bottom mounting. 5 3/4"W 15 3/8"L 3"H, Wt. 1 lb. 4 oz. \$45.00



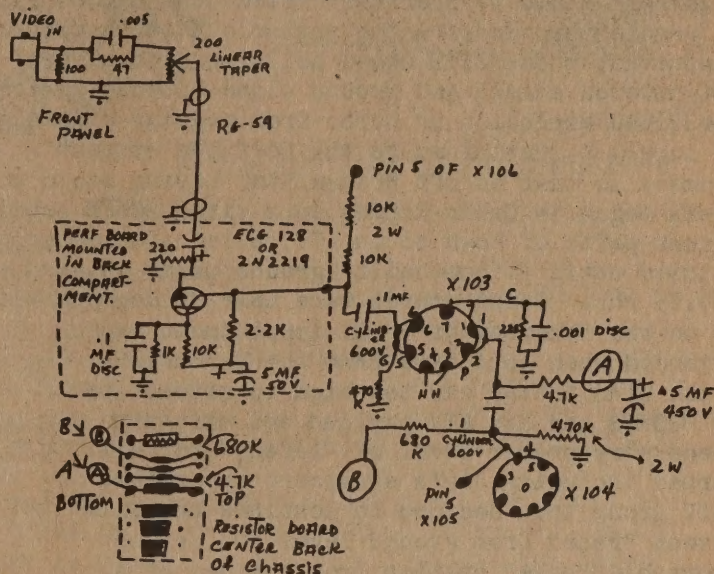
W60RG, Tom

Those of you who have been looking for the right can for a 1200 antenna know it's tough to find the right diameter and length in a coffee can. The minimum dia. is 7" and the 3lb. cans are only 6". Some 5lb. food cans can be found behind some restaurants, but there are some small wastepaper baskets (circular files), you can get at discount houses and department stores for about \$3 that are even solderable. Take along a scale and get one that is between 7 and 10" in dia. and taller than 10", preferably twice the diameter. Mount the $\frac{1}{4}$ wave (2.17") spike 3" from the back wall and you have a simple gain antenna that should work well if close to the machine or for illuminating a dish. We still have some reprints of the HR May, 1967 article available for a two-stamp self-addressed stamped envelope.

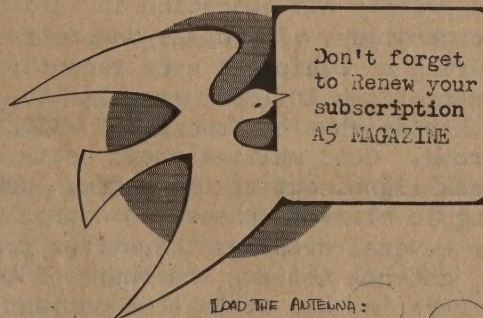
W6ORG, Tom

Last year, Tom, W6ORG, had made a modulator for the TS-418, but only a 1 Megacycle band pass. At that time he said he would like to see a color modulator, so here it is...the two main limitations on bandpass is one, the two low pass circuits one on the ext. mode, in, and on the input to the oscillator cavity. The second is most resistors are mounted on boards that are distantly located from the tube sockets, and a connecting harness that has capacitative coupling to the chassis. The solution: first, remove the ext modulator input low pass filter and replace with BNC; next, remove sync out low pass and mount 200 pot in place. Run the RG-59 from front panel to rear compartment, and mount perf board on center bulkhead on edge, with hardware. Next, cut harness wire off of pins 7, 5, 6, 1, and 2 of X103; put shrink tubing on cut wires to prevent shorts and connect resistors and capacitors directly to tube socket pins; run wires from resistors to resistor board the hot side of the bypassed resistors. Connect the 470K and 680 K to pin 4 of X104, directly treat wires the

WA6SVT, Mike



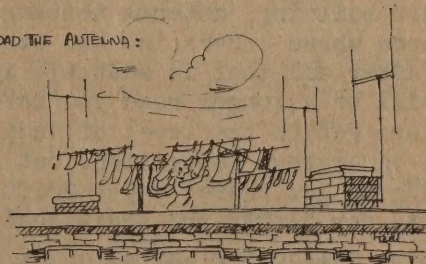
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LOAD THE ANTENNA:



It was a cold morning on February 14th when members of the EASTERN IOWA ATV SOCIETY packed up their gear at 5:30 am. and headed for the small rural farming community of Stanwood, Iowa to participate in a joint venture between two groups and their love for their "hobby". At a meeting in January, it was brought before the special meeting of "Balloonists of Iowa, Inc." that Amateur Radio TV operators "film" the balloon rally on videotape as well as provide a live "remote" broadcast using portable TV transmitters and receivers on site. The request was approved, and WBØKFB began building a completely portable 10 watt ATV system including 12 VDC powered camera and ground plane antenna system. Using dry-cell batteries to avoid any possible explosion or burns from regular batteries while up in the balloons, a sufficient power supply was obtained to the portable system. A modified switching system was added to the camera so that on/off transmitter keying could be accomplished on the camera itself.

Tests began in Cedar Rapids Iowa with WBØKFB sending "live" remote TV pictures from all different parts of town to an ATV "base" station manned by ATV'er WBØZPX. Different antennas were tried until a "homebuilt" ground plane antenna with radials cut for the operating freq. at 439.25 Mhz. Temperatures were near 35 degrees with a recent snowfall on the ground which added to the "excitement"? Disappointment was experienced when word came from the balloonists that the wind factor was too high to attempt to carry WBØKFB and his ATV payload and maintain the necessary proper level of "safety" for all concerned including Jim's equipment apparatus. The ATV group then decided to continue and film the event "race" from ground level and set up the portable "base" station from the bed of a Truck owned by ATV'er WBØARK. As the Balloons passed near the "marker" one by one in an attempt to hit the spot with "markers" deciding the winner, the event was filmed on videotape and remoted LIVE to the viewing public from Jim's walking ATV unit out in the field back to the base station. "It was a fun experience for all of us and taught us of the many possibilities that Amateur ATV remote operation that could be applied to many public functions" said Jim Hamblin, WBØZPX.



WBØKFB Jim Buttleman "REMOTE"

For a relatively new group of ATV enthusiasts, the Eastern Iowa ATV Society has been building a success story to promote ATV operation in various Iowa/Illinois communities. Videotape demonstrations and displaying of equipment were recently done at the Davenport Iowa Hamfest in March as well as demonstrations in local schools etc. A new distance "record" was reported by ATVer WDØEKP of Cedar Rapids when he "received" WBØQCD, Mike Stone of Lowden, Iowa FSTV signals 41 miles down the road. Good multi-element beams with low-loss coaxial line and "GASSFET" pre-amps "dug the weak signal out of the noise. WBØQCD used two "J-Beams" designed and built in England totalling 96 elements phased to approximately 18.5 dbd of gain. The communication was repeated for several evenings thereafter proving it "can be done" after nearly 11 months of kit building, antenna testing and hours of testing. "It is the feeling of pioneering in an area where others in this state seem content with two meter FM operation as their challenge" and after all that is what ATV is all about.

It will be a longer road yet before the Iowa ATV'ers get to the level of Indiana and Calif. hams on Amateur Television, but it is just fun trying to get there" says WBØQCD. Future ATV events for EIATVS are additional public remoted events, helicopter and aircraft transmissions and representation at local "hamfests".

IT CAN ALSO BE NOTED THAT MOST OF THE GROUP ALSO ARE ACTIVE SSTV'ERS ON HF AND VHF BANDS.

1981 Dayton Hamvention

Mike Stone, WBØQCD

A5

SPECTRONICS

KLM



VOLKER
WRAASE

ROBOT

Amateur Television Magazine

The 1981 Dayton Hamvention is once again history! Perhaps the largest hamfest under one roof, the Dayton event draws Amateurs of all modes from all parts of the world. If you haven't attended this "madness" yet, only you are the loser. There appeared to be less automobiles this year in the parking areas than previous years, but attendance records revealed a large crowd which means America is indeed "buddying-up" even going to hamfests. The biggest array of mobile antennas had to go to the Motorola blue van that had a section of Rohn 25G, rotor and stacked Cushcraft Two-Meter 11 element yagis on the bumper. The Peoria, Illinois group won the award for the most beer cans between seats while in Dayton.



5NØDOG (K4QX), Dave Guthrie from Lagos, Nigeria is permanently back stateside and led the charge to the front doors on Friday at noon. (It was his turn to buy the beer this year and indeed he did!) Dave was A5 MAGAZINE'S SSTV'er of the year for 1980. Henry and Tom had their usual booth next to ROBOT RESEARCH and displayed the latest in FSTV gear. Tom showed his recent videotapes of the Jet Propulsion Lab in Pasadena (copies are available) while Henry signed up new customers and sold back issues of his fine publication. The 3 deck TV monitor panel Henry had for sale didnt last too long and it looks real nice here at my console! Mary Ann, WBØYSS (W6ORG KYL) is getting better looking everyday and it amazes me how she still puts up with her worse half. ROBOT RESEARCH dispelled any rumors of a new product

announcement of a 3 memory COLOR SSTV system by having no new gear present although there was always a crowd around the popular 800 keyboard/terminal display. KW CONTROL SYSTEMS, INC. and VOLKER WRAASE displayed the fascinating SC-422A SSTV Converter and KB-422 Keyboard in a very nice looking booth. WB2OWX and WB1ARZ demonstrated the optional "light pen" that draws pictures from your monitor screen into the memory of the German units. Dick (ARZ) was like a little kid with the light-pen just waiting to snatch a mugshot of a passer-by into memory so that he could add mustaches and horns etc etc. (They finally hauled him off in a white van). APTRON LABS displayed their new line of commercial quality FSTV gear including the model 15700 ATV Repeater with filters (hook up antennas and go). I am examined the various pieces of APTRON gear and was impressed with the ruggedness and quality in workmanship. Their small ATV portable 15 watt transceiver broke the \$400 price barrier with many nice features desirable by the serious ATV'er. (Followup articles to follow). K9KTH Bob from the Bloomington group, won the hamfest's "UGLY" award followed by a close second by WB9UCW of Illinois. W9NTP, Don Miller (long time ATV pioneer) had an excellent booth display showing COLOR SSTV pictures using two and three memory systems. Don's MSTV (Medium Scan TV) was the main attraction. If you haven't seen MSTV at work--it is neat! The picture frame is broken down into blocks of squares and as the "movement" takes place the individual squares move depicting action within the picture. (See Don's demonstration at the Sept. Peoria Superfest). For you people living in the 9th Call District, you lost your ARRL Director (W9NTP) to a questionable election and ramrodded resignation fiasco by Harry Dannals (ARRL). Full details available from K9TFJ, T. James Barnes, c/o Indiana Radio Club Council, Greenwood, Ind. or read May 81 issue of 73 MAGAZINE page 147 for the gory details. Fight 'em Don, we're behind you! INFOTECH revealed a new "do it all" terminal for Rtty and ASCII called the 500 series. The Friday night get together at the Ramada saw alot of new faces for SSTV'ers. The TRS 80 COLOR Computer micro was demonstrated as well as at the Saturday afternoon forum. The Dayton "flea" market was as usual loaded with bargains galore. If you couldn't see the price at one table it was lower at another. Can't wait 'till next year!

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Main Features

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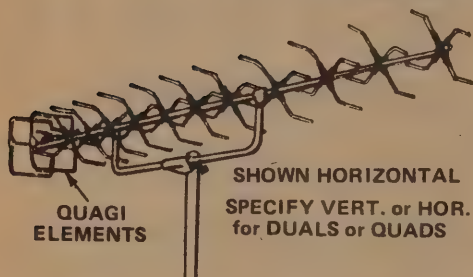
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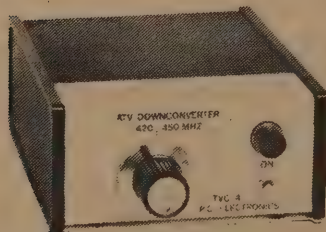
J Beam MBM48/70cm Antenna



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Stripline MRF901 (1.7 db NF) preamp and double balanced mixer module digs out the weak ones but resists intermods and overload. Connects between uhf antenna and TV set tuned to channel 2 or 3. Varicap tunes 420 to 450 mHz. Requires +12 to 18 vdc @ 20 ma.

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TOM W6ORG
MARYANN WB6YSS

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"NEW"

Amateur Television Magazine

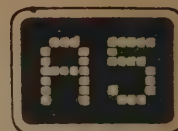
Amateur
Radio

WAS SSTV

Contest



CONTEST DATES: SEPTEMBER 5, 6 & 7TH 1981 (LABOR DAY WEEKEND)
CONTEST TIMES: EST 9AM SEPTEMBER 5TH TILL 9PM SEPTEMBER 7TH
CST 8AM SEPTEMBER 5TH TILL 8PM SEPTEMBER 7TH
MST 7AM SEPTEMBER 5TH TILL 7PM SEPTEMBER 7TH
PST 6AM SEPTEMBER 5TH TILL 6PM SEPTEMBER 7TH



FREQUENCIES:	80 METERS	3.845--3.855 MHZ. *	
(Recommended)	40 METERS	7.220--7.280 MHZ. *	
	20 METERS	14.230--14.240 MHZ.	**=bonus multiplier
	15 METERS	21.340--21.350 MHZ. *	
	10 METERS	28.680--28.690 MHZ.	
	6 METERS	50.200--50.210 MHZ. *	
	2 METERS	144.230--144.240 MHZ. * (SSB) or 146.43 MHZ. (FM)*	

CONTEST DESCRIPTION: A simple A5 SSTV "Worked All States" contest designed to give the operator a maximum of 60 hours of available time (for operating convenience and propagation fairness) in which the purpose is to work as many of the 48 continental United States also including Alaska and Hawaii as possible via Slow-Scan Television. As in the January annual contests, the contest is designed for "quality" rather than quantity. The extended operating time period and encouragement of unpopular SSTV band segments ensures minimum QRM between SSTV operators and experimentation and operation on all Amateur bands.

CONTEST RULES: All contacts must incorporate the video/signal report in "video" as well as the call letters of the stations worked. A bonus point factor of 10 may be added to those SSTV contact on non-popular bands designated by the star (*) above. For example, a station may end up with a total score of 39 states + 40 pts. (4 contacts on 40 meters). Additional contacts within the same state count only as bonus points. Other than suggested frequencies may be used as long as the frequency used is legally authorized for SSTV operation. Log entries (or submitted copies thereof) must endorse the signature of the operator and mailed (SASE for return) to A5 MAGAZINE Contest Manager WBØQCD, Mike Stone, PO Box H, Lowden, Iowa 52255 by midnight September 10th 1981. Results will be published in the November/December issue of A5 MAGAZINE.

CONTEST PRIZES: Winning entry with the most "States Worked" and bonus points will receive 1-year "free" subscription to A5 MAGAZINE and "Contest Certificate". 2nd and 3rd place winners will receive a certificate. Stations completing all 50 states will have their picture published in A5 MAGAZINE with writeup.

PLEASE PASS THE WORD ON ALL NETS AND DURING YOUR SSTV QSOs. LET'S MAKE THIS CONTEST KNOWN AND ENJOYABLE TO WORK. ATTACHED IS A "WORKED ALL STATES SSTV" MAP TO COLOR IN AS YOU GO. ADDITIONAL MAPS AVAILABLE VIA CONTEST MGR. -- GOOD LUCK!



Amateur Television Magazine

DEVOTED TO HAM TV

★ YOU ASKED FOR IT ★



SSTV

4 PICTURES PER FRAME IN YOUR ROBOT 400

by KD6HF

ROBOT '400 MOD FOR STORAGE & TRANSMISSION OF FOUR SEPARATE & DIFFERENT SSTV PIX

By popular demand, I am giving my method for receiving, storing and transmitting four complete and different slow scan pictures in one robot '400. The format for each picture is 64 pixels x 64 lines.

WB3APB Bill has experimented with this and other '400 mods and much interest has been generated. You will enjoy using this modification and be pleased with the results.

Many special effects are possible with this mod; i.e., superimpose received video over your own camera or taped video. Store any color format SSTV from WA7WOD, W9NTP, G3NOX or others in one memory and retransmit the color shots to produce a 2x2 color display of the video you received, four color pix from one memory. More uses for this mod in a bit.

Refer to Fig. 1 to see the relative size and location of the four quadrants on a '400 display. Each quadrant is individually accessible, just like having four individual memories. As mentioned before, each picture is formatted into a 64x64 display.

The quadrants may be selected one at a time for retransmission or all four may be sent in normal manner. Either way, the receiving station will see four pictures at the same time.

The effect is like the frame multiplying or 256 modification put out by WA7WOD and WA4QAA in A5 Magazine. In fact, if you do not already have that mod, refer to vol. 10, no. 2, March-April, 1980, p. 28. You will need to install it in order for this mod to work properly. I have included the schematic of that mod but not all the details.

How it works: Refer to Fig. 2.

Switch S1 is a DP5T wafer type. One section, S1-A, is wired between IC U24 pin 12 and IC U21 Pin 3. The other section, S1-B is wired between IC U41 Pin 12 and IC U37 Pin 10.

IC numbers refer to chips on the '400 using robot's designations.

S1 selects in Position 1 (normal), the digital address signals from U24 and U41 as inputs to the memory address multiplexers U21 and U37 respectively. This is for normal '400 operation.

In positions 2 through 5, combinations of +5 volts and ground are routed as inputs to U21 pin 3 and U37 pin 10, such that each switch position selects a different quadrant for storage in 1/4 of memory and/or transmission of a slow scan picture.

In order to store a complete slow scan picture in each quadrant, the slow scan clock U60, must be slowed down to one-half normal rate, i.e., appx. 1.043 KHz. This may be accomplished by dividing U60's out by 2 (see fig. 3). With this method, some provision for switching out the divide-by-two for normal operation must be made.

A simpler way is to install the 246 mod mentioned earlier.

Fig. 4 shows the schematic for this. How to wire it: Refer to fig. 2 and robot layout.

Parts Needed

- 1-DP5T wafer switch non-shorting type
- Several feet of hook-up wire
 - wire S1A positions 2 and 3 together. These two connections go to ground in the '400.
 - wire S1A positions 4 and 5 together. These go to +5v in the '400.
 - wire S1B positions 2 and 4 to chassis ground and positions 3 and 5 to +5v.
 - connect a wire from S1A position 1 to U24 pin 12 on the bottom of the circuit board at U24's socket.
 - connect a wire from S1B position 1 to U41 pin 12 on the bottom of the board at U41's socket.
 - take out U21 and gently bend pin 3 out at a 90° angle to the IC.
 - carefully solder a small gauge wire to the bent-out pin. The other end is soldered to S1A wiper terminal.
 - Place U21 back in its socket, leaving Pin 3 bent out.
 - likewise, lift pin 10 of U37 out and run a wire from pin 10 to S1B wiper terminal.
 - replace IC U37 leaving pin 10 bent out.

This completes the wiring unless you still don't have the 256 mod installed.

The wafer switch S1 may be mounted where convenient. Mine hangs out the side (typically) of my home brew '400. WB3APB, Bill, has his in an external box. K5KFC, Mitch, put his on the side of his HCV scan converter.

I have a circuit which retransmits the 1/4 frame pictures as a full-size 128x128 and have used it on the air with K5FKFC and KA5AAP. However, I don't have documentation on it. So look for a circuit board to come out of this in the future.

How to operate it:

I will assume that the 256 mod has been installed.

The first thing to do is calibrate the '400 front panel width control and then the 256 mod width trimmer will be set next.

Begin by placing quadrant select switch S1 (Fig. 2) in position No. 1 (normal). Now place 256 mod switch (#1 in fig. 4) in the 128 position and tune in an SSTV signal or use one of your tapes if your record/playback speeds are the same. Adjust width control on the front panel of the '400 for proper width of a 60 Hz slow scan picture. Next switch 256 mod switch (#1 in fig. 4) to the 256 position and adjust 246 mod pot (R256 in fig. 4) to produce a display which is exactly two pictures wide.

When the above procedure is done properly, the controls should not need further setting when switching between normal 128 line video and 64x64 video. Also, the slow scan clock U60 will be properly set for both modes.

With S1 in normal, the '400 and the 256 mod will function as usual.

Now place the 256 mod switch in 256 position and S1 to position no. 2. This will select quadrant no. 1 for viewing and storage of the slow scan signal. Note that whatever video is in quadrants 2, 3 and 4 will be held in memory regardless of the '400's hold-continue position. When the switch is put into continue, quadrant no. 1 will fill up with video. Freeze a frame and switch to quadrant no. 2 (position no. 3 of S1). Switch back to continue and freeze a frame in no. 2 quadrant. Proceed to fill up quadrants 3 and 4 leaving the hold switch in hold after no. 4.

Now sit back and smile big!!! Look at those pictures - Hi!!

For standard 128x128 reception, switch 256 mod switch back to 128 position and S1 to normal.

To transmit from memory there are two ways. One is to transmit all four quadrants at once as in normal transmissions. The other is to select any one quadrant by using S1 (256 mod does not affect transmission except for one instance which is covered in the A5 article mentioned). When transmitting from one quadrant, the picture is sent in the same format, i.e., 64x64 with two pictures on top and two on bottom, all being whichever quadrant picture is selected. For use in color SSTV, load the red, green and blue pictures in three of the quadrants (or only two quadrants in the case of two-color systems). Next, retransmit each color separately by using S1. The receiving station will see four "living color" pictures at his end. I have worked WA7WOD and KA5AAP in this mode and results are great.

This mod has so many uses that only a few are included here. No doubt your imagination will provide many hours editing new tapes. But here are a few ideas to get you going.

Superimpose your XYL's picture in one corner with a full size shot of yourself.

Use three of the quadrants to hold incoming video and the fourth as a real time monitor so you don't miss any shots while waiting your turn in a QSO.

Store pictures from different stations and then retransmit them all at once. (Sit back and wait for the questions).

Good look with the mod, hope you like it.

73 - Mac KD6HF

KD6HF



Fig. 1

REPRESENTATION OF SSTV MONITOR SHOWING LOCATION & NUMBERING OF 64x64 QUADRANTS. FOUR DIFFERENT PIX MAY BE STORED IN ONE '400 MEMORY.

ROBOT 400 MOD*

STORE 4 DIFFERENT SSTV PIX IN ONE MEMORY

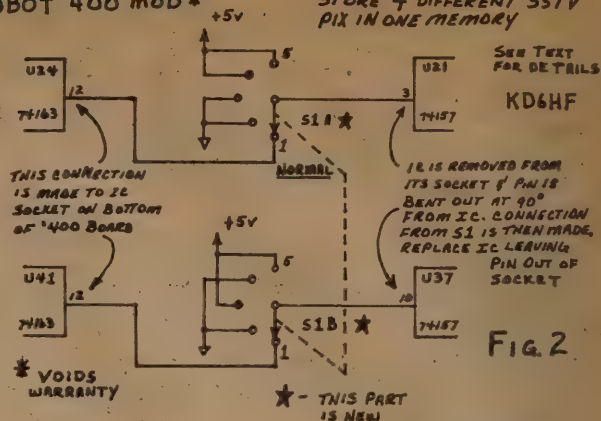


Fig. 2

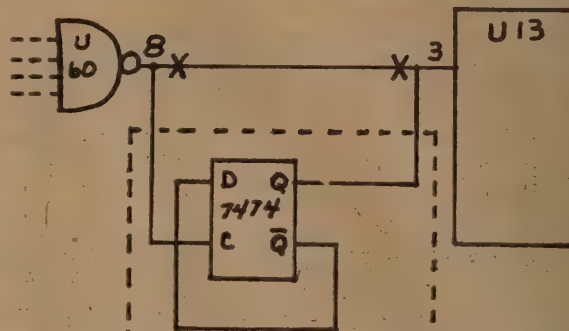


Fig. 3

KD6HF

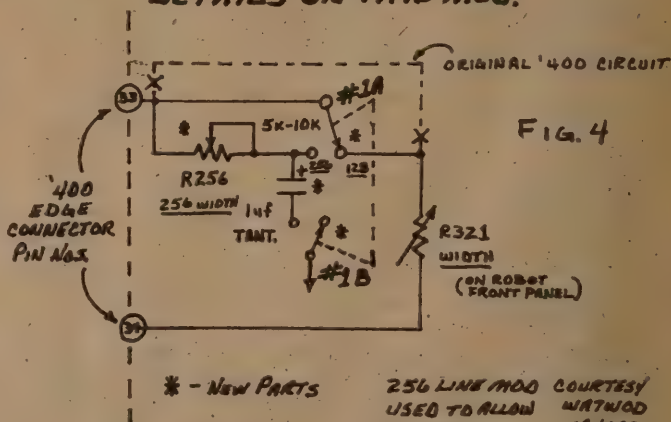


Fig. 4

* - New Parts

256 LINE MOD COURTESY USED TO ALLOW WA7WOD STORAGE OF 4 DIFFERENT SSTV PIX IN ONE '400 NEW MOD SEE TEXT BY KD6HF FOR THIS

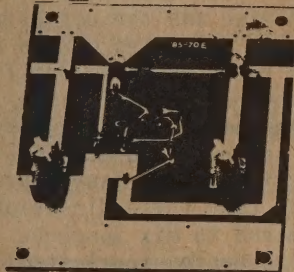
NEXT ISSUE - LIGHT PEN FOR YOUR 400. DRAW & WRITE ON A TV SCREEN - DIRECT INTO MEMORY 6

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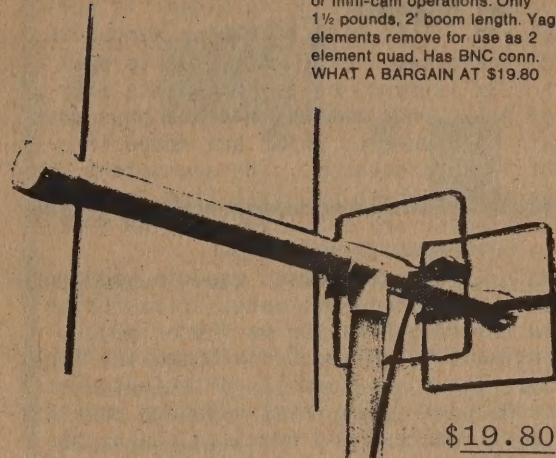
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ATS-1 & ATS-2. In a box complete with 110vac supply, PL-259/BNC/Type F connectors (Type N upon req.)
ATS-1 MRF901 front end ... \$79
ATS-2 NEC645 front end ... \$109.00

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Portable, rugged, designed to get ATV out of the shack! #8 copper elements assure top performance. Use with link-ups or mini-cam operations. Only 1 1/2 pounds, 2' boom length. Yagi elements remove for use as 2 element quad. Has BNC conn. WHAT A BARGAIN AT \$19.80

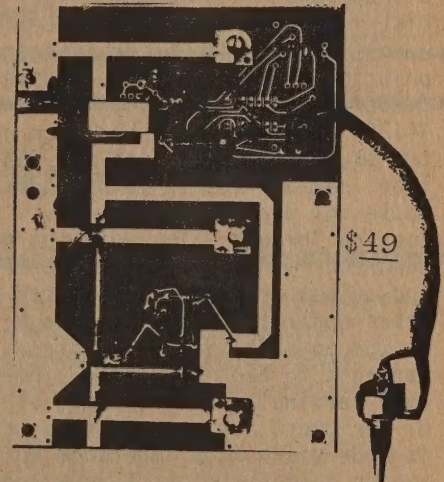


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ATV STARTER

BATC BASICS (for newcomers only!)

Video Levels: A positive going signal is normally employed. This will be either composite video (VBS) at a level of 1 volt peak to peak (of which 0.3x is sync) or non composite (VB) at a level of 0.7x. Non composite video thus does not contain sync pulses, which are added in a subsequent video processor. The equivalent German abbreviations which you will find on some European equipment are BAS (=VBS) and BA (=VB). FBAS is color composite video.

Pulse Levels: The main pulses used in video production are Line Drive/Horizontal Drive (LD or HD), Field Drive/Vertical Drive (FD or VD), Mixed Blanking (MB), Mixed Syncs/Composite Syncs (MS or CS). These are normally distributed at 2 volts peak to peak (p-p) level although some British and most Japanese and American equipments require 4 volts p-p. Burst Gate/Burst Flag (BG or BF) is normally a 1 volt p-p signal.

Power Supplies: Most solid state circuits require either +5 or +12 volts DC or both. If regulators are not provided on the individual circuit boards smoothing and decoupling capacitors should be placed across the supply rails on the PCBs. Suitable types are 10 to 100 uF electrolytic for smoothing and .01 to .1 uF ceramic for decoupling.

Distribution: Distribution cables should be coaxial, ideally of 75 ohm impedance. In amateur practice digital video and drive pulses are sometimes distributed at TTL level, in which case a 74128 line driver IC should be employed between the source generator and the cable. VHF 'bootlace' coaxial feeder is cheap and effective cable for distribution.

Looping Through: To avoid the need for providing separate feeds for each piece of equipment, video and pulses are normally 'looped through.' This means apparatus requiring these signals is connected in a chain and the signals connected in sequence to each item of equipment. The line is only terminated (in 75 ohms) at the final piece of equipment; at all others a bridging connection is made via a high impedance buffer circuit. This avoids loading up the line which would otherwise be unable to maintain the proper level of signal. An onboard amplifier following the high impedance buffer amplifies the signal bled off to the level required by the equipment.

Termination: Every video and pulse feed must eventually be terminated in a 75 ohm impedance, otherwise objectionable reflections could occur. This is done by arranging a 75 ohm resistor in the final piece of equipment being fed or by using a temporary 'stuffer' plug containing the resistor. It is important to avoid double terminations as these will degrade the signal just as the absence of termination will. Some equipment, such as vision monitors and video recorders, is provided with two sockets and a switched termin-

ating resistor so that the incoming signal can be terminated or looped through at will. The switch is normally marked '75 ohm on/off.'

Connectors: Until recently the most commonly used series of connectors used for video was the UHF type (also known as M type or F&E). These are robust, reliable and fairly cheap on the surplus market. New equipment is now tending to use BNC connectors which are more compact. For amateur purposes, IJHF types are probably the most functional, particularly since any surplus equipment acquired is likely to be fitted with these. Belling Lee plugs and sockets are to be avoided as they tend to wear loose with frequent use and are easily broken.

19" Racks: Most professional equipment is designed to fit in 19" rack cabinets. The front panels are 19" wide and the actual racks 17" wide. Height is in multiples of one unit (1U+1 3/4"). Fixing holes are also drilled at 1 3/4" intervals. Obviously, there is no obligation for amateur equipment to follow these standards but since cabinets and accessories are available commercially from many sources it does make sense to copy these dimensions, especially if you intend to mix homebrew equipment with surplus professional items.

Camera Lenses: Most non broadcast TV cameras are designed to take cine camera type lenses. These are classified by the size and thread of fitting, either C-mount or D-mount. C-mount lenses are used with both 1" and 2/3" vidicons and D-mount lenses are used only with 2/3" vidicon cameras. The C-mount lenses are made in two patterns, either for 1" or 2/3" vidicons; the former are much more common. Note that a lense designed for a 2/3" vidicon will give rise to objectionable shading around the edges of the picture if fitted to a 1" tube camera. Lenses designed for 35 mm cameras can also be used for TV and can in fact be cheaper than lenses designed specifically for TV use. The most common fitting is Pentax screw mount and you can buy special C-mount to Pentax screw adaptors from specialist camera shops.

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THE RX-2300 MICROWAVE DOWNCONVERTER PRE-BUILT — NOT A KIT!

The TEM RX-2300 downconverter is a state-of-the-art low-noise microwave receive converter that can be used to convert microwave signals in the 1900 - 2700 Mhz range down to VHF. The RX-2300 is especially suited for line-of-sight reception of broad band amateur, digital, FM, AM or TV modes of transmission and outputting to a standard VHF receiver or television.

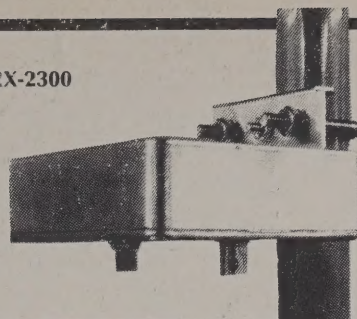
Other features include: mast head mount, remote tuning, microstrip construction, temperature compensation and standard power requirements. This compact unit is housed in a high quality cast metal box and is fitted with a mast clamp for easy installation. Each RX-2300 is quality constructed and pre-tested to assure high performance, excellent stability and long life, even when subjected to severe climate conditions.

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THE RX-2300



GENERAL SPECIFICATIONS:

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Performance: Front end device is rated **2.4 dB NF** at 2 Ghz; conversion gain is greater than 25 dB.

Power Requirements: + 12 to 17 VDC @ 30 ma. variable voltage; fed via the 75 ohm coaxial feedline.

Mechanical: Housed in a 3.6" × 4.5" × 1.1" cast metal enclosure; RF input connector is a BNC (Type N optional); output connector is a standard 75 ohm TV type F.

Antenna Requirements: Any good 2 Ghz 50 ohm horn, yagi, slotted array or parabolic dish type.

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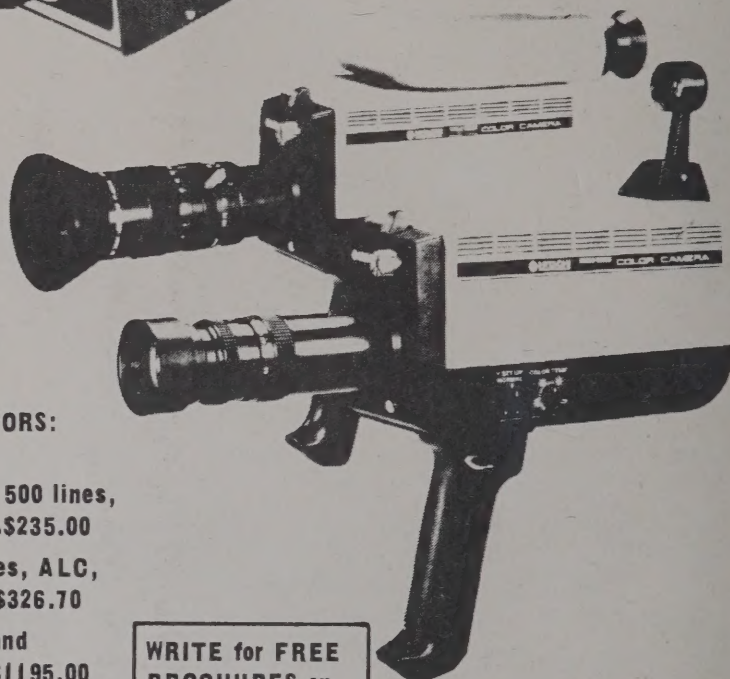
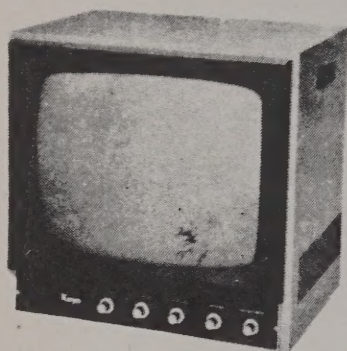
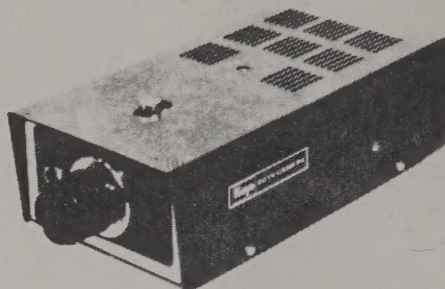
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